

WHAT IS CLAIMED IS:

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1. A method for processing information in a receiver of a multichannel optical communication system, comprising:
- 5 receiving a wavelength division multiplexed (WDM) signal having a symbol rate and comprising a plurality of non-intensity modulated optical information signals having a minimum channel spacing comprising a multiple of the symbol rate within 0.4 to 0.6 of an integer;
- 10 demultiplexing the non-intensity modulated optical information signals from the WDM signal;
- converting each of the non-intensity modulated optical information signals to an intensity modulated optical information signal using an asymmetric
- 15 interferometer; and
- recovering a data signal from the intensity modulated optical information signal.
2. The method of Claim 1, wherein the minimum
- 20 channel spacing comprises the multiple of the symbol rate within substantially 0.5 of the integer.
3. The method of Claim 1, wherein the symbol rate comprises a transmission bit rate of the WDM signal.
- 25 4. The method of Claim 1, wherein the asymmetric interferometer comprises an asymmetric Mach-Zender interferometer.
- 30 5. The method of Claim 1, wherein the asymmetric interferometer comprises two interferometer paths having a path length difference operable to create a one symbol period shift in the optical information signal.

6. The method of Claim 1, further comprising recovering the data signal as an electrical signal using a dual detector.

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7. The method of Claim 1, wherein the non-intensity modulated optical information signal comprises a frequency-modulated optical information signal.

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8. The method of Claim 1, wherein the non-intensity modulated optical information signal comprises a phase-modulated optical information signal.

9. An optical receiver for a wavelength division multiplex (WDM) optical communication system, comprising:

5 a demultiplexer operable to demultiplex a wavelength division multiplex (WDM) signal into a plurality of non-intensity modulated optical information signals;

an asymmetric interferometer operable to receive a corresponding one of the plurality of non-intensity modulated optical information signals;

10 the asymmetric interferometer operable to convert the non-intensity modulated optical information signal into an intensity modulated optical information signal; and

a detector operable to recover a data signal from the intensity-modulated optical information signal.

15 10. The optical receiver of Claim 9, wherein the WDM signal comprises a symbol rate and the non-intensity modulated optical information signals have a minimum channel spacing comprising a multiple of the symbol rate within 0.4 to 0.6 of an integer.

11. The optical receiver of Claim 10, wherein the symbol rate comprises a bit rate of the WDM signal.

25 12. The optical receiver of Claim 9, wherein the asymmetric interferometer comprises a Mach-Zender interferometer.

30 13. The optical receiver of Claim 9, wherein the asymmetric interferometer comprises two interferometer paths having a path length difference operable to generate a one-bit shift in the optical information signal.

14. The optical receiver of Claim 9, wherein the detector comprises a balanced dual detector.

5 15. The optical receiver of Claim 9, wherein the non-intensity modulated optical information signal comprises a frequency-modulated optical information signal.

10 16. The optical receiver of Claim 9, wherein the non-intensity modulated optical information signal comprises a phase-modulated optical information signal.

17. A method for communicating information in a wavelength division multiplexed (WDM) optical communication system, comprising:

transmitting each of a plurality of data signals
5 using non-intensity modulation of a wavelength disparate carrier signal, the carrier signals having a minimum channel spacing comprising a bit rate multiple within 0.4 to 0.6 of an integer;

converting the non-intensity modulation of the
10 carrier signals into an intensity modulation using an asymmetric Mach-Zender interferometer; and

recovering the data signal using a detector coupled to an output of the Mach-Zender interferometer.

15 18. The method of Claim 17, wherein the asymmetric Mach-Zender interferometer comprises a path length difference of one bit and complementary outputs.

19. The method of Claim 18, wherein the detector is
20 a dual detector coupled to the complementary outputs of the Mach-Zender interferometer.

20. The method of Claim 17, wherein the minimum
25 channel spacing comprises the multiple of the symbol rate within substantially 0.5 of the integer.